Dennis-Yarmouth Regional School District
Science Scope and Sequence
Grade 5

Unit Name	Unit Description / Overview	Stage 1: Desired Results Enduring Understandings - Students will understand that...	Essential Questions	Standards
Master Unit 1 Matter and Energy Flow in an Ecosystem	Students engage in investigations about photosynthesis and plant growth. Students will explores the matter and energy flow in ecosystems.	The materials that make up a plant come mostly from carbon dioxide in the air and from water, not from the soil. Plants get the water they need as water cycles through the Earth's systems (the geosphere (solid earth), the hydrosphere (the earth's waters), and atmosphere (air surrounding the earth), and the biosphere (where plants and animals live)) through the processes of evaporation, precipitation, condensation, transpiration, and runoff. Plants get the materials they need for growth and reproduction mostly through a process called photosynthesis. Photosynthesis requires light energy (from the Sun) for a part of air (carbon dioxide) and water to combine to form sugar (glucose) and oxygen. The sugars can be immediately used or stored for growth or later use, such as flower and seed production. There is a relationship between environmental conditions and plant growth. The energy and materials that animals need for their bodies come from plants and can be traced back to the sun. Models can use symbols to represent parts and processes in scientific contexts.	What variety of plants should be grown in the garden? What is necessary to grow healthy plants? How does a composter work?	5.3-5-ETS3-2(MA). Use sketches or drawings to show how each part of a product or device relates to other parts in the product or device. 5-LS1-1. Ask testable questions about the process by which plants use air, water, and energy from sunlight to produce sugars and plant materials needed for growth and reproduction. 5-LS2-1. Develop a model to describe the movement of matter among producers, consumers, decomposers, and the air, water, and soil in the environment to (a) show that plants produce sugars and plant materials, (b) show that animals can eat plants and/or other animals for food, and (c) show that some organisms, including fungi and bacteria, break down dead organisms and recycle some materials back to the air and soil. 5-LS2-2(MA). Compare at least two designs for a composter to determine which is most likely to encourage decomposition of materials. 5-PS3-1. Use a model to describe that the food animals digest (a) contains energy that was once energy from the sun, and (b) provides energy and nutrients for life processes, including body repair, growth, motion, body warmth, and reproduction. 5.G.A.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.

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Master Unit 2 Observing Our Sky	This unit builds upon observations in earlier grades of the Sun, Moon, and Stars from the perspective of Earth in order to understand Earth's place in space and celestial movement. In grade 1, students observed the sun, moon, and stars and described how each celestial body appears to rise in one part of the sky, and appears to move across the sky and then appears to set. They also analyzed data in order to discover and identify relationships among seasonal patterns of change, including environmental seasonal changes. In grade 5, students begin learning more sophisticated ways to explain celestial movement with relation to earth. Lessons represent a learning progression of the big ideas related to celestial motion. They will build their conceptual knowledge through observations, analysis, and discussion. At the end of the unit students will develop a model to explain Earth's relationship to the Sun, Moon, and Stars. They will also present arguments as to why the Sun is a star that appears larger and brighter than other stars and Earth's gravitational force causes objects to fall towards Earth's center.	A star is a luminous fixed point in the sky, composed mostly of gas, that is held together by its own gravity. Our Sun appears larger than other stars because it is closer to Earth than other stars. A star is called a sun if it is the center of a planetary system. The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. The gravitational force exerted by Earth on objects is directed down	What types of objects in the sky should the planetarium show? How could the seats move in order for viewers to feel the motion of planets and the pull of gravity? How can people's five senses be included in the show?	5-ESS1-1. Use observations, first-hand and from various media, to argue that the Sun is a star that appears larger and brighter than other stars because it is closer to Earth. 5-ESS1-2. Use a model to communicate Earth's relationship to the Sun, Moon, and other stars that explain (a) why people on Earth experience day and night, (b) patterns in daily changes in length and direction of shadows over a day, and (c) changes in the apparent position of the Sun, Moon, and stars at different times during a day, over a month, and over a year. 5-PS2-1. Support an argument with evidence that the gravitational force exerted by Earth on objects is directed toward Earth's center.

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Master Unit 3 Human Impact on the Earth's System	Students learn about the cycling of water through a watershed, and about the relative amounts of fresh and salt water on the Earth. They research examples of man's impact on the Earth and ways we can reduce harmful impacts.	water is distributed around the Earth amount of water on Earth never changes and the amount available for human consumption is small.	What types of water exist on Earth, how much of each type of water is there, and where is it found? How does water move through the hydrologic cycle? Where does the fresh water on Earth originate? How is water used and, at times, misused? How can fresh water be conserved?	5-ESS2-1. Use a model to describe the cycling of water through a watershed through evaporation, precipitation, absorption, surface runoff, and condensation. 5-ESS2-2. Describe and graph the relative amounts of salt water in the ocean; fresh water in lakes, rivers, and ground water; and fresh water frozen in glaciers and polar ice caps to provide evidence about the availability of fresh water in Earth biosphere. 5-ESS3-1. Obtain and combine information about ways communities reduce human impact on the Earth resources and environment by changing an agricultural, industrial, or community practice or process. 5-ESS3-2(MA). Test a simple system designed to filter particulates out of water and propose one change to the design to improve it. 5.3-5-ETS3-1(MA). Use informational text to provide examples of improvements to existing technologies (innovations) and the development of new technologies (inventions). Recognize that technology is any modification of the natural or designed world done to fulfill human needs or wants.
Master Unit 4 Interactions in Matter	In this unit of study, students describe that matter is made of particles too small to be seen by developing a model. The crosscutting concept of scale, proportion, and quantity is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, and use these practices to demonstrate understanding of the core ideas.	Matter of any type can be divided into particles too small to see . The amount of matter is conserved when it changes form, even when it seems to disappear, changes in properties occurs or new matter is made. Measurements of a variety of observable properties can be used to identify materials. Chemical reactions that occur when some substances are mixed, can be identified by the emergence of substances with different properties. Observable phenomena exist from the very small to the immensely large. Matter is made of particles and can be transferred between objects. Students observe the conservation of matter by tracking matter flows and cycles before and after processes and recognizing that the total weight of substances does not change.	What properties are helpful to consider when separating matter from each other? What tools can be used to separate mixtures? What materials are good electrical insulators?	5-PS1-1. Use a particle model of matter to explain common phenomena involving gases, and phase changes between gas and liquid and between liquid and solid. 5-PS1-2. Measure and graph the weights (masses) of substances before and after a reaction or phase change to provide evidence that regardless of the type of change that occurs when heating, cooling, or combining substances, the total weight (mass) of matter is conserved. 5-PS1-3. Make observations and measurements of substances to describe characteristic properties of each, including color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility. 5-PS1-4. Conduct an experiment to determine whether the mixing of two or more substances results in new substances with new properties (a chemical reaction) or not (a mixture).